A59.E561
JACC March 9, 2010
Volume 55, issue 10A

HYPERTENSION, LIPIDS AND PREVENTION

OXIDATIVE STRESS AND INFLAMMATORY BIOMARKERS IN PRE-HYPERTENSIVE AND NORMOTENSIVE AFRICAN AMERICANS

ACC Poster Contributions
Georgia World Congress Center, Hall B5
Monday, March 15, 2010, 3:30 p.m.-4:30 p.m.

Session Title: Diagnostic Approaches and Methods
Abstract Category: Hypertension
Presentation Number: 1185-107

Authors: *Keith M. Diaz, Deborah L. Feairheller, Kathleen M. Sturgeon, Sheara Williamson, Praveen Veerabhadrappa, Deborah Crabbe, Michael D. Brown, Temple University, Philadelphia, PA*

Background: In the early pathogenesis of hypertension, changes may occur in systemic oxidative and inflammatory states during the pre-hypertensive stage which may contribute to the disproportionate rates of hypertension in African Americans. The purpose of this study was to compare plasma levels of inflammatory and oxidative stress biomarkers in pre-hypertensive and normotensive African Americans.

Methods: 33 African Americans (4 M, 29 F) who were sedentary, non-diabetic, non-smoking, free of cardiovascular disease, and not on antihypertensive medication followed an AHA low-salt, low-nitrate diet for 6 weeks. Upon completion of the 6-week dietary stabilization period, subjects underwent 24-hr ambulatory blood pressure (BP) monitoring and had their blood drawn in the morning following an overnight fast. Pre-hypertensives (120-139/80-89 mmHg, n = 20) and normotensives (< 120/80 mmHg, n = 13) were categorized according to their mean 24-hr BP.

Results: Pre-hypertensives and normotensives were similar in age, body mass index, total cholesterol, triglycerides, LDL cholestrol, and HDL cholesterol. No significant differences were found between pre-hyprertensives and normotensives for the antioxidant biomarkers superoxide dismutase (4.1 + 0.7 vs. 4.2 + 3.5 U/ml, p = .96) or total antioxidant capacity (2.3 + 1.4 vs. 2.1 + 1.8 mM, p = .74). Thiobarbituric acid, a marker of lipid peroxidation, was not significantly different between the groups (10.7 + 8.5 vs. 9.2 + 12.7 µmol/L, p = .71). For the inflammatory biomarkers, pre-hypertensives had significantly higher high-sensitivity C-reactive protein (hs-CRP) (3.5 + 2.3 vs. 1.4 + 1.5 mg/L, p < .05), but showed no significant difference for tumor necrosis factor-☒ (42.3 + 45.3 vs. 33.8 + 19.8 pg/ml, p = .55).

Conclusions: Pre-hypertensives exhibited higher hs-CRP levels compared to normotensives, but showed similar circulating levels of antioxidant and lipid peroxidation biomarkers. These results suggest that pre-hypertension may be a pro-inflammatory condition in African Americans. Further research needs to be conducted to establish the role of inflammation in the progression from pre-hypertension to hypertension in African Americans.